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SCHWEIZERISCHE EIDGENOSSENSCHAFT
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Bescheinigung

Die beiliegenden Akten stimmen überein mit den ursprünglichen Unterlagen der auf den nächsten Seiten bezeichneten, beim unterzeichneten Amt als Anmeldeamt im Sinne von Art. 10 des Vertrages über die internationale Zusammenarbeit auf dem Gebiet des Patentwesens (PCT) eingegangenen Patentanmeldung.

Attestation

Les documents ci-joints sont conformes aux pièces originales relative à la demande de brevet spécifiée aux pages suivantes, déposées auprès de l'Office soussigné, en tant qu'Office récepteur au sens de l'article 10 du Traité de coopération en matière de brevets (PCT).

Confirmation

It is hereby confirmed that the attached documents are corresponding with the original pages of the international application, as identified on the following pages, filed under Article 10 of the Patent Cooperation Treaty (PCT) at the receiving office named below.

DOCUMENT DE PRIORITÉ

PRÉSENTÉ OU TRANSMIS CONFORMÉMENT À LA RÈGLE 17.1.a) OU b)

Berne, le 07 mars 2005

Eidgenössisches Institut für Geistiges Eigentum
Institut Fédéral de la Propriété Intellectuelle
Swiss Federal Intellectual Property Institute

Administration Patente
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Patent Administration

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Istituto E

Copie pour l'office récepteur

191-4.B.WO-P

PCT REQUEST

Original (for **SUBMISSION**)

0	**For receiving Office use only**	
0-1	International Application No.	PCT/CH 2004/00136
0-2	International Filing Date	08. März 2004 (08.03.2004)
0-3	Name of receiving Office and "PCT International Application"	RO/CH - Demande international PCT

0-4	**Form - PCT/RO/101 PCT Request**	
0-4-1	Prepared Using	PCT-SAFE [EASY mode] Version 3.50 (Build 0002.150)
0-5	**Petition** The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty	
0-6	**Receiving Office (specified by the applicant)**	Swiss Federal Intellectual Property Institute (RO/CH)
0-7	**Applicant's or agent's file reference**	191-4.B.WO-P
I	**Title of Invention**	CLOSURE SYSTEM FOR TUBULAR ORGANS
II	**Applicant**	
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PCT REQUEST

Original (for **SUBMISSION**)

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IV-1	**Agent or common representative; or address for correspondence** The person identified below is hereby/ has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:	agent
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V	**DESIGNATIONS**	
V-1	**The filing of this request constitutes under Rule 4.9(a), the designation of all Contracting States bound by the PCT on the international filing date, for the grant of every kind of protection available and, where applicable, for the grant of both regional and national patents.**	
VI-1	**Priority Claim**	NONE
VII-1	**International Searching Authority Chosen**	European Patent Office (EPO) (ISA/EP)

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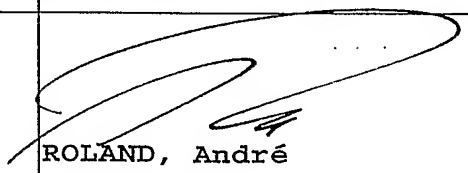
VIII	**Declarations**	Number of declarations	
VIII-1	Declaration as to the identity of the inventor	-	
VIII-2	Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent	-	
VIII-3	Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application	-	
VIII-4	Declaration of inventorship (only for the purposes of the designation of the United States of America)	-	
VIII-5	Declaration as to non-prejudicial disclosures or exceptions to lack of novelty	-	
IX	**Check list**	number of sheets	electronic file(s) attached
IX-1	Request (including declaration sheets)	4	-
IX-2	Description	2	-
IX-3	Claims	1	-
IX-4	Abstract	1	✓
IX-5	Drawings	2	-
IX-7	TOTAL	10	
	Accompanying Items	paper document(s) attached	electronic file(s) attached
IX-8	Fee calculation sheet	✓	-
IX-17	PCT-SAFE physical media	-	✓
IX-19	**Figure of the drawings which should accompany the abstract**	1	
IX-20	**Language of filing of the international application**	English	
X-1	**Signature of applicant, agent or common representative**		
X-1-1	Name:	ROLAND, André	
X-1-2	Name of signatory		
X-1-3	Capacity		

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Original (for **SUBMISSION**)

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10-1	Date of actual receipt of the purported international application	08. März 2004 (08.03.2004)
10-2	Drawings:	
10-2-1	Received	
10-2-2	~~Not received~~	
10-3	Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application	
10-4	Date of timely receipt of the required corrections under PCT Article 11(2)	
10-5	International Searching Authority	ISA/EP
10-6	Transmittal of search copy delayed until search fee is paid	X

FOR INTERNATIONAL BUREAU USE ONLY

11-1	Date of receipt of the record copy by the International Bureau	

Closure system for tubular organs

Field of the invention

The present invention relates to surgical devices for adjusting the diameter of tubular organs such as the esophagus, the stomach, the colon or the urethra. Such devices may be used as sphincters (e.g. anal or urinary sphincter) or for the control of obesity.

It more precisely relates to surgically implantable adjustable rings for encircling said tubular organs.

State of the art

Surgical devices for adjusting the diameter of tubular organs are disclosed in patent documents US 5 658 298, US 5 601 604, FR 2 823 663, WO 01/85071 and WO 03/059215.

The device disclosed in WO 03/059215 has a ring shape which comprises a first and second end parts and which is designed to be closed around a tubular organ towards its two end parts by a closure system to adjust the diameter of said tubular organ by forming a loop, the first end part forming a sleeve having a first and second open end parts and which is designed to receive the ring second end part, the sleeve main axis being defined along a direction which is substantially perpendicular to the main direction of the ring first end part, the ring second part furthermore comprising a locking protrusion adapted to hold the border of the sleeve second end part and thereby to secure the ring in a closed position.

Summary of the invention

An object of the present invention is to provide an improved closure system for the previous cited prior art devices.

This and other objects are achieved with the device as defined in claim 1.

An embodiment of the invention will be discussed in a more detailed way here below together with figures 1 and 2.

The adjustable ring **1** comprises a first **3** and a second **4** end parts.

Any suitable material can be used with the ring **1**, e.g. a biocompatible elastomeric material. The external part of the ring **1** can be more rigid than the internal part, this later one having an internal diameter which can be adjusted.

The first end part **3** forms a sleeve which is designed to receive the second end part **4**.

The second end part **4** has an extension **11** which contains adjusting means, for instance a wire which can be pulled or pushed in order to adjust the ring **1** diameter.

The sleeve **3** has a first end part **6** which is reinforced by a flange **12** and a second end part **7** which contains a hole **5** designed to receive and efficiently retain a protrusion **2** which is fixed to the ring second end part **4**.

For closing or opening the ring **1** the sleeve second end part **7** is provided with an extension forming a flexible tab **9**.

The tab **9** contains a hole **10** situated close to the sleeve hole **5**. The presence of the hole **10** in the tab **9** provides several advantages, in particular by preventing the accidental opening of the closure system when the tab **9** has to support forces which tend to fold the tab **9** in the direction of the extension **11**. The forces may be due to the movement of the patient or the organs of the patient or to the fluid or bolus passing through the tubular organ. The zone between both holes **5,10** is reinforced by a flange **8**. The other sides of the tab hole **10** are also reinforced by flanges **13,14**.

The protrusion **2** shape is designed to closely match the flange **8** shape.

The invention is of course not limited to the above cited example.

For instance, the hole **10** can be replaced by a portion being more flexible than the remaining part of the tab **9**.

Such a more flexible portion can be obtained by different ways, for example in making the portion thinner than the tab.

The invention can be used for different uses, for instance as a sphincter or as a gastric ring.

Claims

1. Surgically implantable adjustable ring (1) comprising a first (3) and second (4) end parts and which is designed to be closed around a tubular organ towards its two end parts (3,4) by a closure system (2,5) to adjust the diameter of said tubular organ by forming a loop, the first end part (3) forming a sleeve having a first (6) and second (7) open end parts and which is designed to receive the ring second end part (4), the sleeve main axis being defined along a direction which is substantially perpendicular to the main direction of the ring first end part (3), the ring second part (4) furthermore comprising a locking protrusion (2) adapted to hold the sleeve (3) and thereby secure the ring in a closed position, characterized by the fact that the sleeve (3) comprises a hole (5) designed to receive said locking protrusion (2).

2. Adjustable ring according to claim 1 wherein the sleeve second end part (7) contains said hole (5) and partially covers the ring second end part (4).

3. Adjustable ring according to claim 2 comprising a reinforcement (8), for instance a flange, situated on at least the hole side which is in close contact with the protrusion (2) when the ring (1) is closed.

4. Adjustable ring according to anyone of the previous claims comprising a tab (9) extending from the sleeve second end part (7).

5. Adjustable ring according to claim 4 wherein the tab (9) comprises a flexible portion, being more flexible than the remaining part of the tab, which is situated close to said sleeve hole (5), in such a way as to prevent an accidental opening of the closure system.

6. Adjustable ring according to claim 5 wherein said flexible portion comprises a hole (10).

Abstract

Surgically implantable adjustable ring (1) comprising a first (3) and second (4) end parts and which is designed to be closed around a tubular organ towards its two end parts (3,4) by a closure system (2,5) to adjust the diameter of said tubular organ by forming a loop, the first end part (3) forming a sleeve having a first (6) and second (7) open end parts and which is designed to receive the ring second end part (4), the sleeve main axis being defined along a direction which is substantially perpendicular to the main direction of the ring first end part (3), the ring second part (4) furthermore comprising a locking protrusion (2) adapted to hold the sleeve (3) and thereby secure the ring in a closed position, characterized by the fact that the sleeve (3) comprises a hole (5) designed to receive said locking protrusion (2).

(Fig. No. 1)

FIG. 1

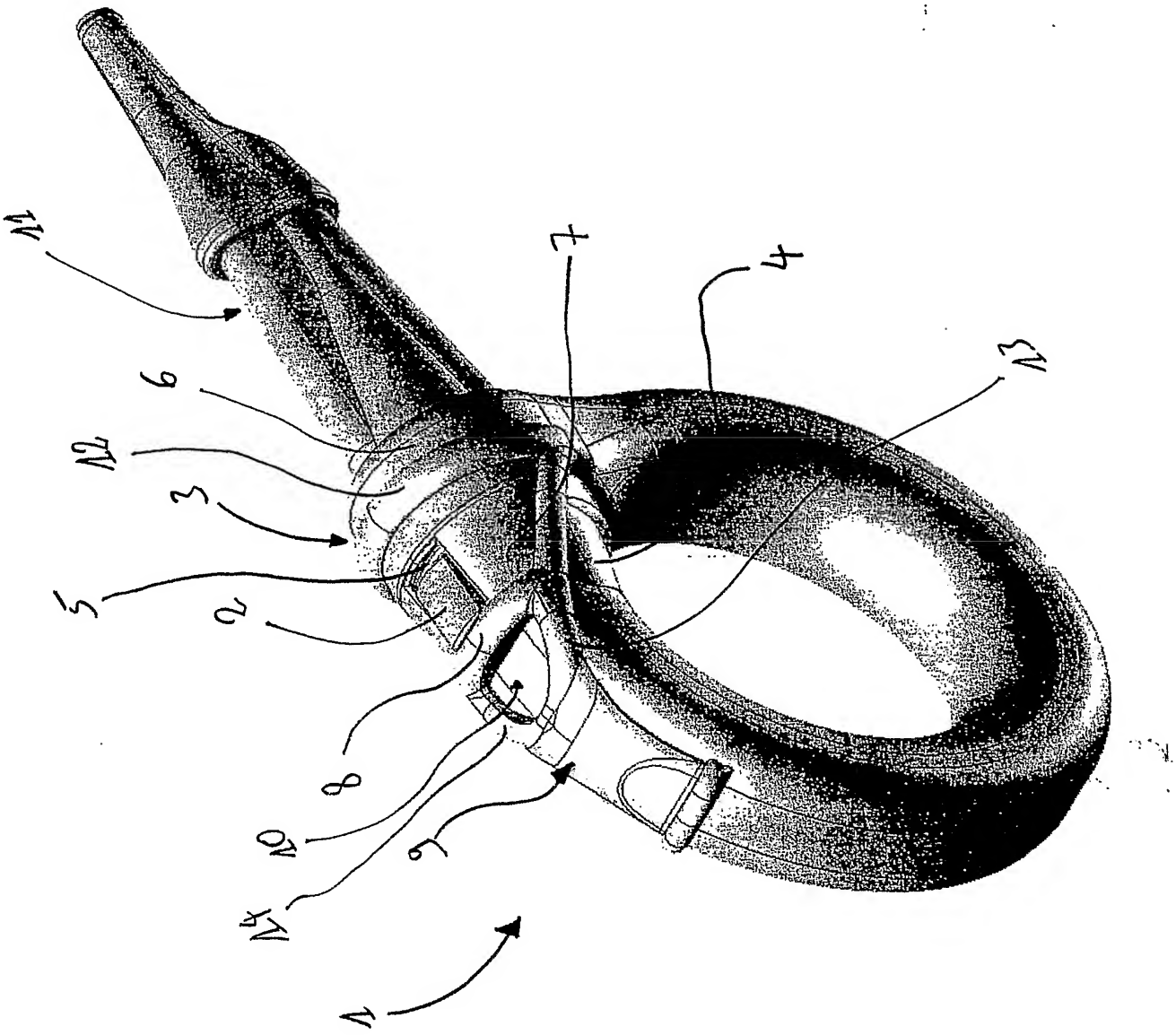

FIG. 2